

CLAIMS

I claim:

1           1. A welding power source capable of  
2           receiving a range of input voltages, comprising:  
3           an input rectifier configured to receive an ac  
4           input and providing a first dc signal;  
5           a dc voltage stage configured to receive the  
6           first dc signal and providing a second dc signal;  
7           an inverter configured to receive the second dc  
8           signal and providing a second ac signal and  
9           configured to receive at least one control input;  
10          an output transformer configured to receive the  
11          second ac signal and providing a third ac signal  
12          having a current suitable for welding;  
13          an output circuit configured to receive the  
14          third ac signal and providing a welding signal;  
15          a controller configured to provide at least one  
16          control signal to the inverter; and  
17          an auxiliary power controller configured to  
18          receive a range of input voltages and providing a  
19          control power signal to the controller.

1           2. The apparatus of claim 1, wherein the  
2           auxiliary power controller is capable of providing the  
3           control power signal at a preselected control signal  
4           voltage, regardless of the magnitude of the ac input  
5           signal.

1           3. The apparatus of claim 2, further  
2           including an auxiliary transformer with a plurality of  
3           primary taps, wherein the auxiliary power controller is  
4           in electrical communication with the plurality of primary  
5           taps.

1           4. The apparatus of claim 1, wherein the dc  
2           voltage stage includes a boost circuit.

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1 5. The apparatus of claim 1, wherein the  
2 inverter includes a pulse width modulator.

1 6. The apparatus of claim 1, wherein the  
2 range of input voltages is 230 volts to 575 volts.

1 7. The apparatus of claim 1 wherein the  
2 output circuit includes a rectifier.

1 8. The apparatus of claim 1 wherein the  
2 output circuit includes a cycloconverter.

1 ✓ 9. A method of providing a welding current  
2 from a range of input voltages, comprising:  
3 rectifying an ac input and providing a first dc  
4 signal;  
5 converting the dc signal to a second ac signal;  
6 transforming the second ac signal into a third  
7 ac signal having a current suitable for welding; and  
8 receiving the ac input and providing an  
9 auxiliary power signal source at a preselected  
10 control power signal voltage, regardless of the  
11 magnitude of the ac input signal.

1 10. The method of claim 9, wherein the step of  
2 converting the dc signal includes the steps of converting  
3 the dc signal to a second dc signal and inverting the  
4 second dc signal to provide the second ac signal.

1 11. The method of claim 9 further including  
2 the step of providing control signals to an inverter.

1 12. The method of claim 9, wherein the step of  
2 providing the auxiliary power signal includes the step of  
3 transforming the ac input signal.

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1 13. The method of claim 10, wherein the step  
2 of converting the first ~~dc~~ signal to a second dc signal  
3 includes ~~boosting~~ the voltage of the first dc signal.

1 ~~14~~<sup>11</sup> The method of claim 10, wherein the step  
2 of inverting includes the step of pulse width modulating.

1 ~~15~~<sup>12</sup> The method of claim 10 further including  
2 the step of rectifying the third ac signal.

1 ~~16~~<sup>13</sup> The method of claim 10 further includes  
2 the step of cycloconverting the third ac signal.

1 ~~17~~ A welding power source for providing a  
2 welding current from a range of input voltages,  
3 comprising:

4 ~~4b~~<sup>bb</sup> rectifier means for receiving an ac input and  
5 providing a first dc signal;

6 converting means for converting the dc signal  
7 to a second ac signal;

8 transforming means for transforming the second  
9 ac signal into a third ac signal having a current  
10 suitable for welding;

11 output means for providing a welding current;  
12 and

13 auxiliary power means for receiving the ac  
14 input and providing an auxiliary power signal at a  
15 preselected control power signal voltage, regardless  
16 of the magnitude of the ac input signal.

1 ~~18~~<sup>17</sup> The apparatus of claim ~~17~~<sup>16</sup>, wherein the  
2 means for converting includes means for converting the dc  
3 signal to a second dc signal and means for inverting the  
4 second dc signal to provide the second ac signal.

1 ~~19~~<sup>18</sup> The apparatus of claim ~~18~~<sup>16</sup> further  
2 including means for providing control signals to an  
3 inverter.

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20. The apparatus of claim 17, wherein the means for providing the auxiliary power signal includes means for transforming the ac input signal into the auxiliary power signal.

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21. The apparatus of claim 17, wherein the means for converting the dc signal to a second dc signal includes means for boosting the voltage.

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22. The apparatus of claim 17, wherein the means for inverting includes means for pulse width modulating.

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23. The apparatus of claim 17, wherein the output means includes means for rectifying the third ac signal.

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24. The apparatus of claim 17, wherein the output means includes means for cycloconverting the third ac signal.

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